Triangulation of the Cube

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  - where each simplex has the same volume,
  - and no new vertices are made.
    - (i.e. The vertices of each simplex are chosen from the vertices of the original cube.)

What is a Simplex?

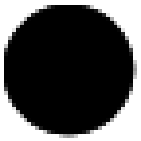
Simplex

An n-**simplex** is the simplest shape in n dimensions.

- Includes points, line segments, triangles, and tetrahedra.
- In graph theory terms, an n-simplex is the complete graph on $n + 1$ vertices.

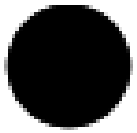
Zero Dimensions

A Point



Zero Dimensions

add a new vertex...

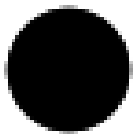


One Dimension

A Line Segment

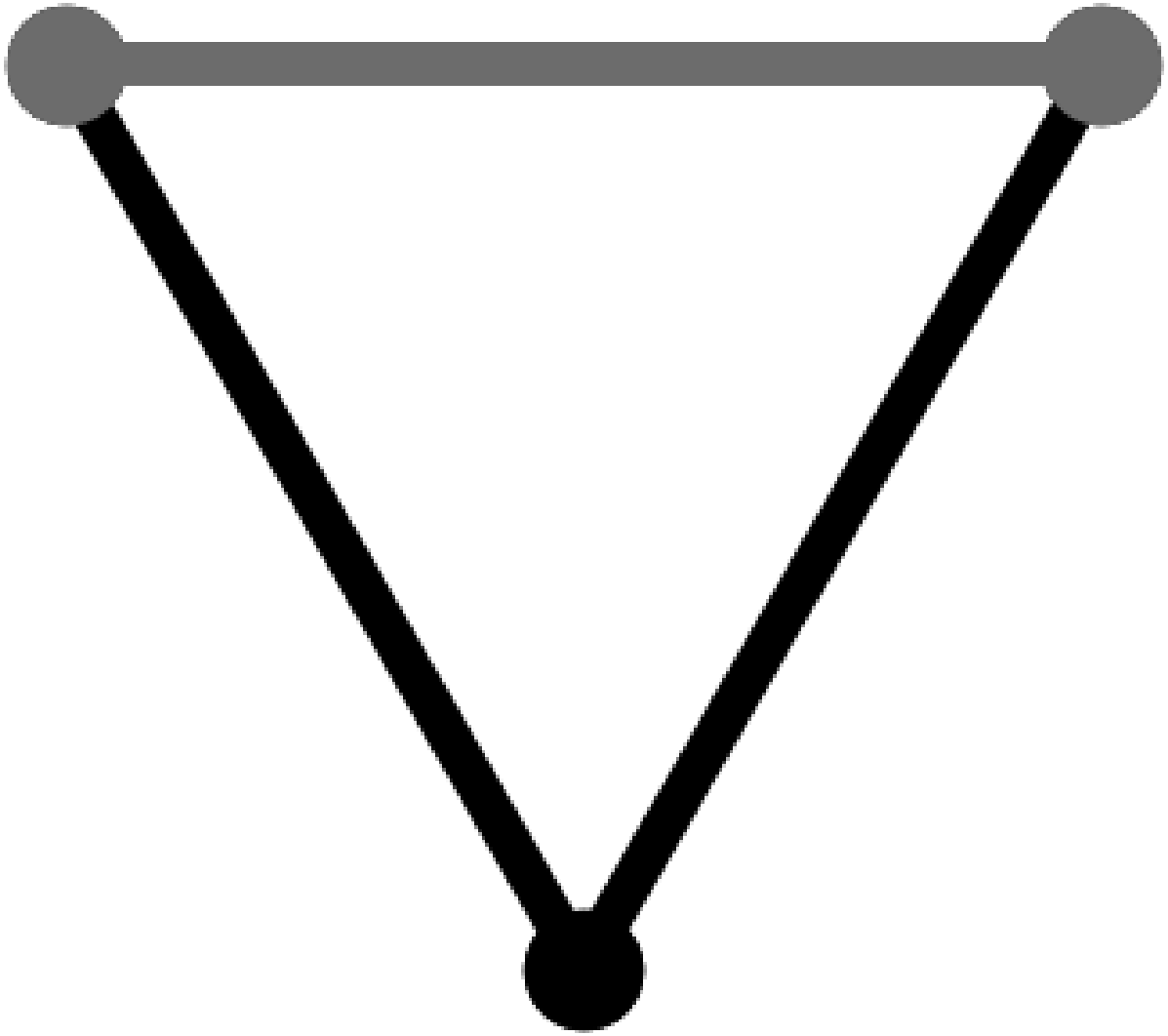
One Dimension

add a new vertex...



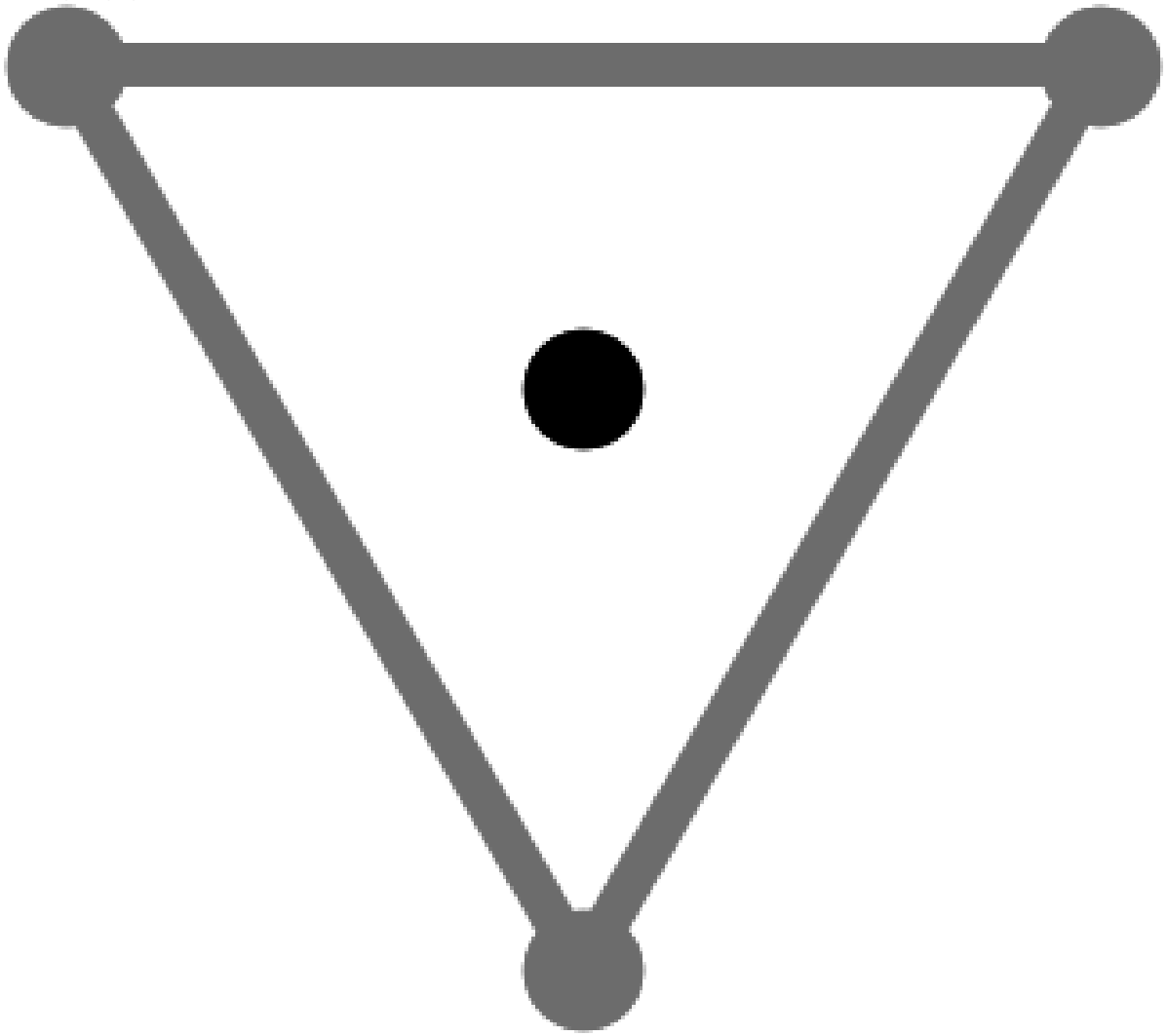
Two Dimensions

A Triangle



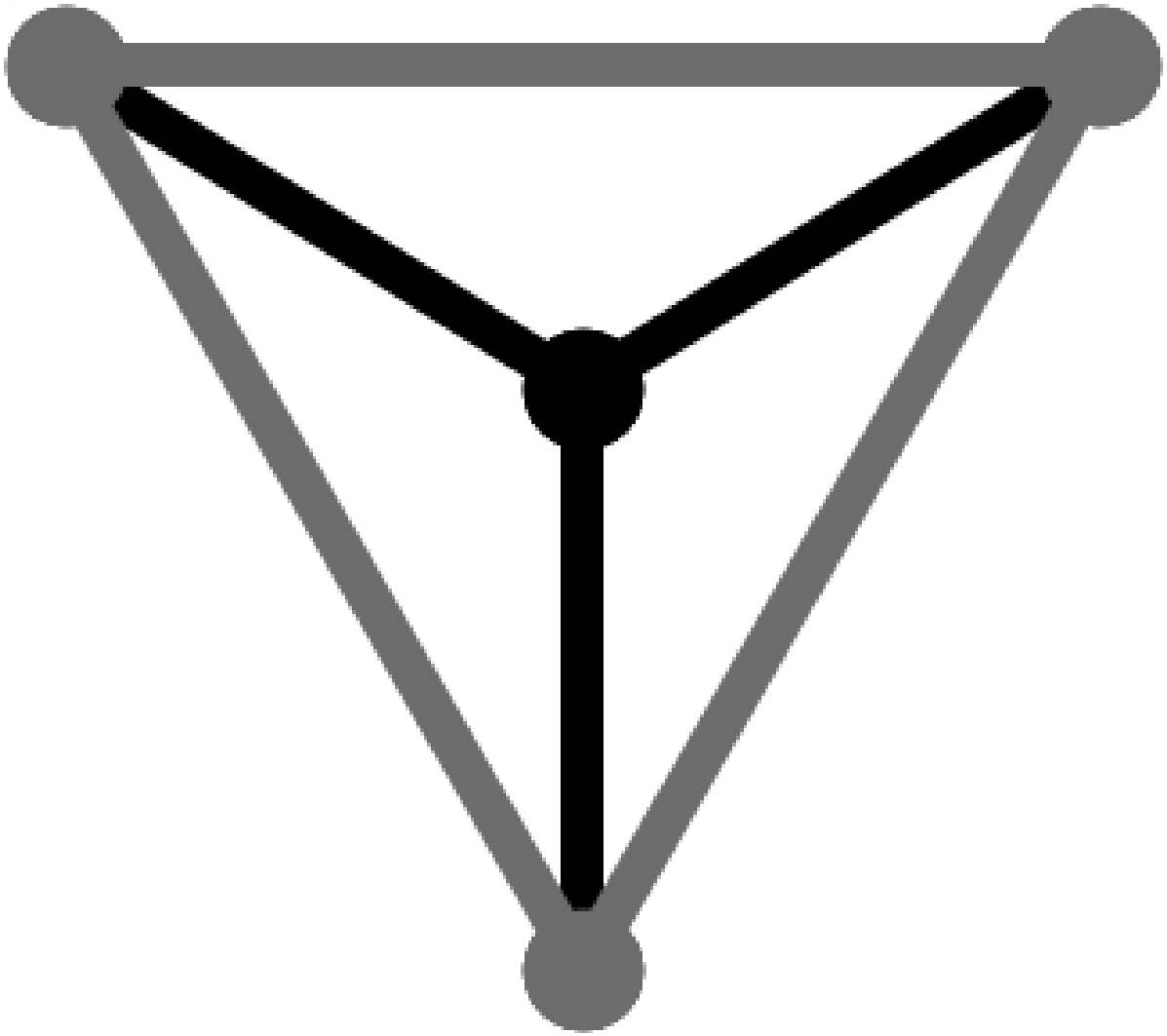
Two Dimensions

add a new vertex...



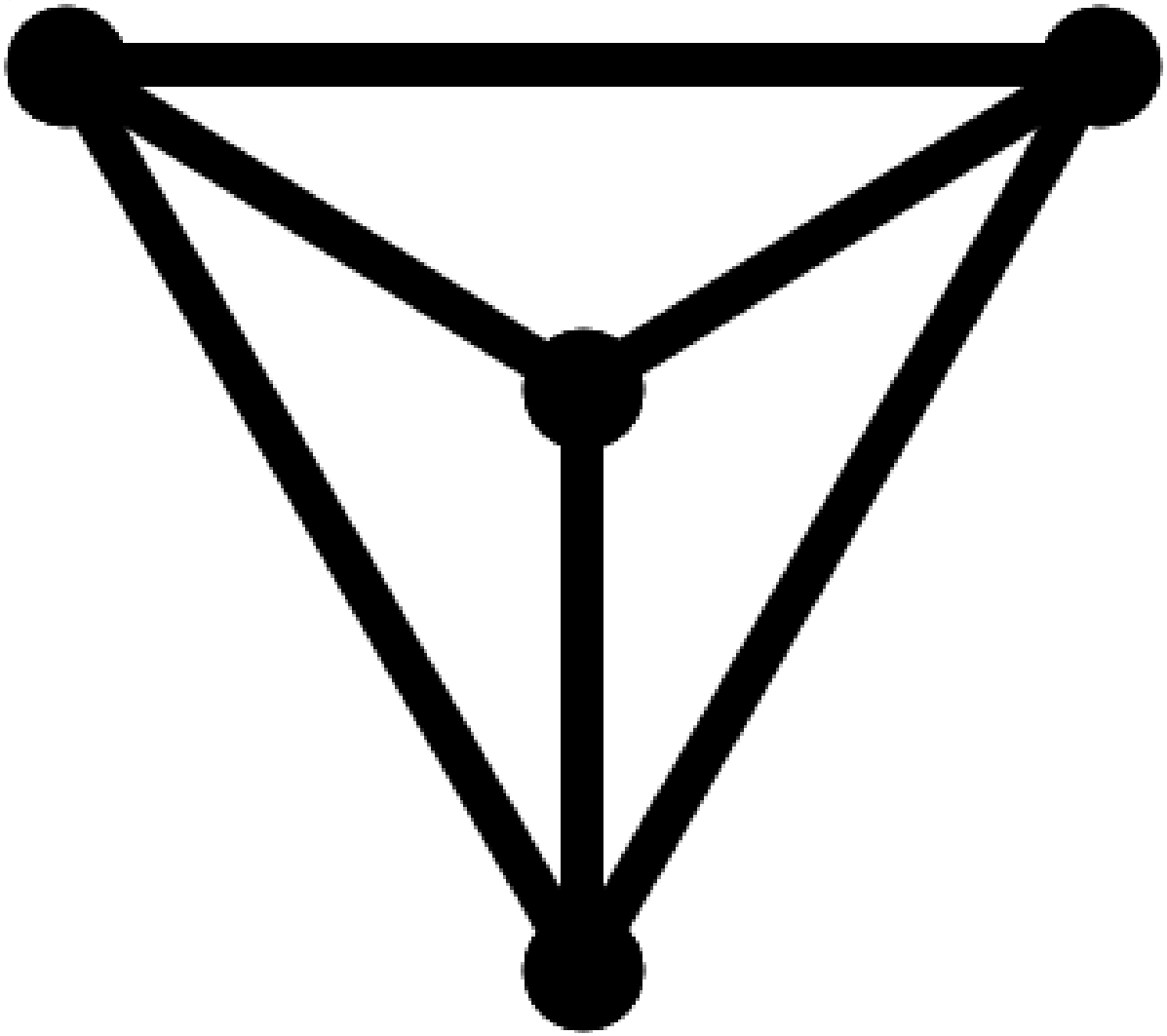
Three Dimensions

A Tetrahedron



Three Dimensions

A Tetrahedron



How do Simplices Fit into a Cube?

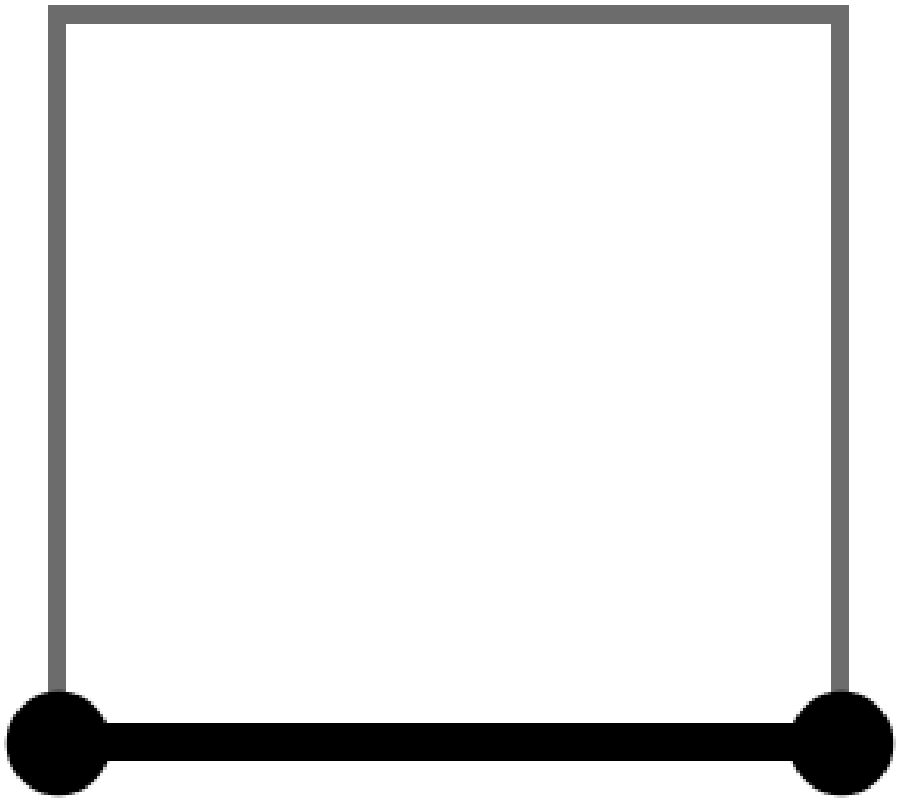
Zero and One Dimensions

A point in a point

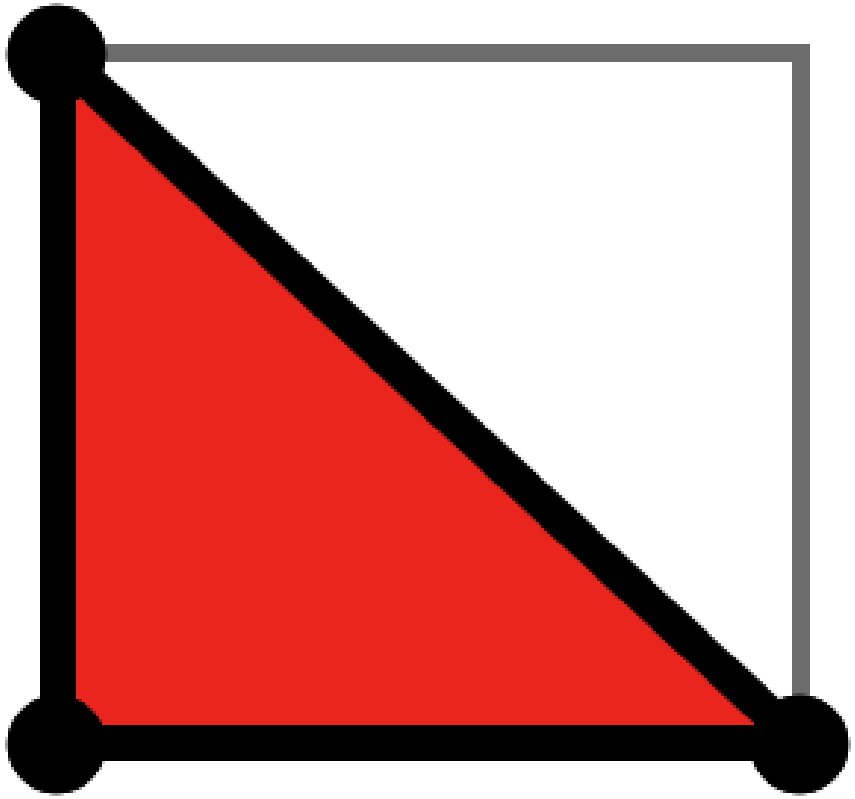
A line segment in a line segment

Two Dimensions

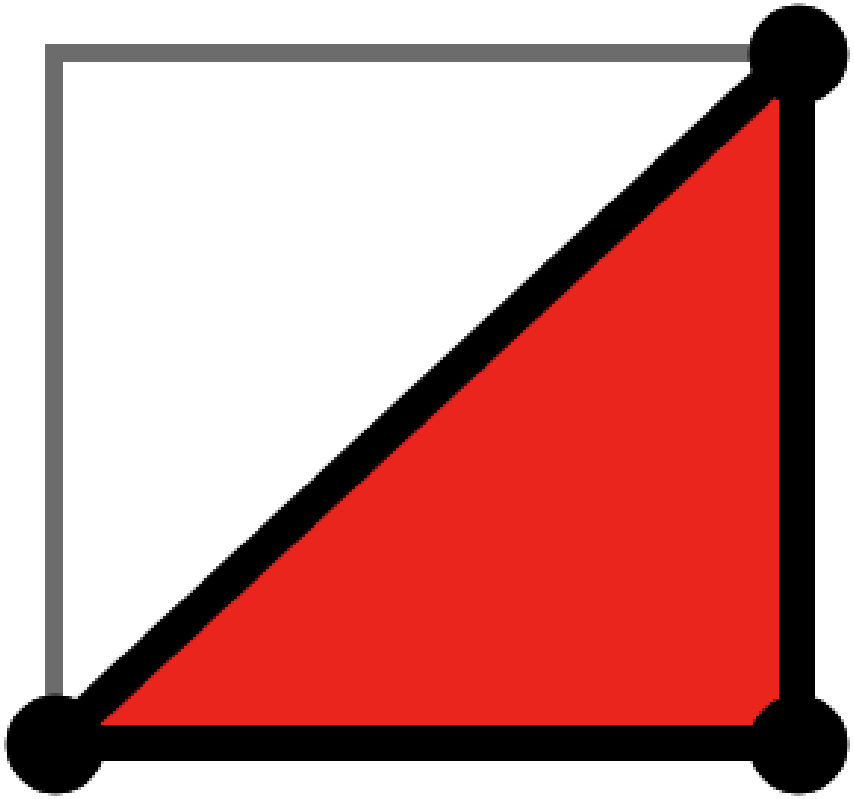
Two Dimensions



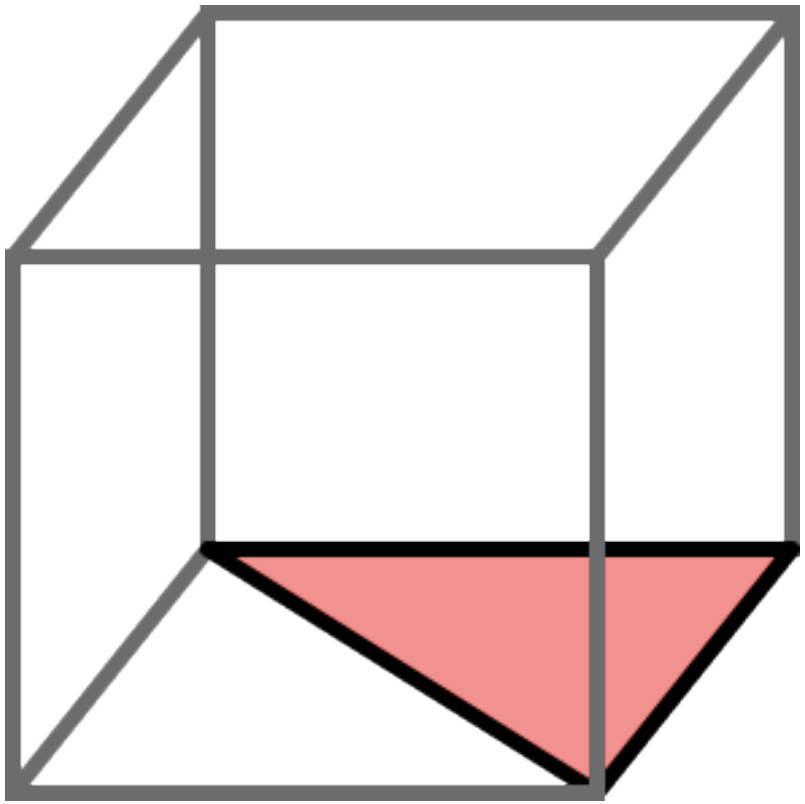
Two Dimensions



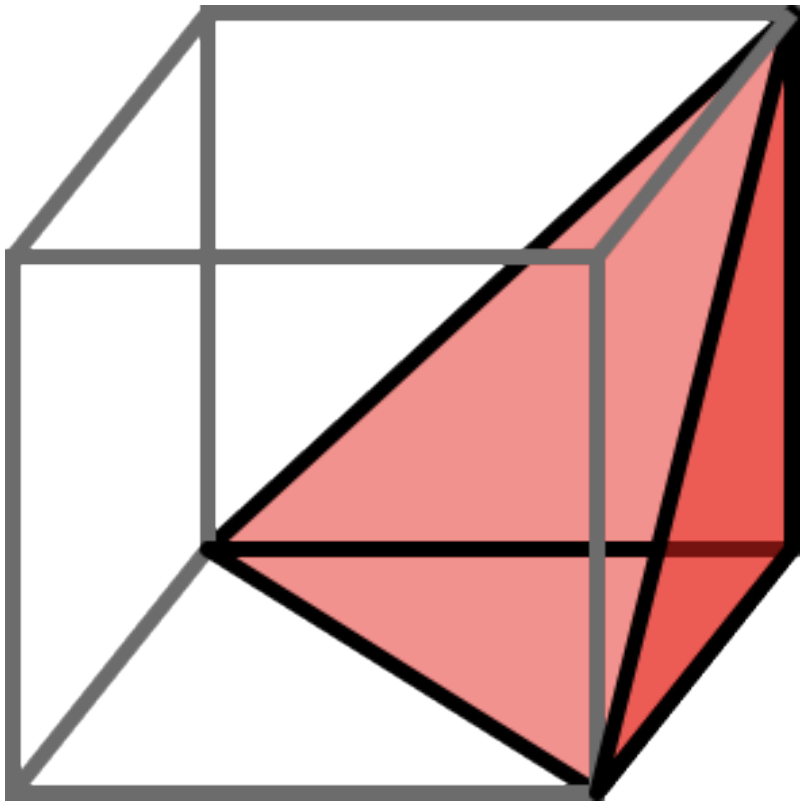
Two Dimensions



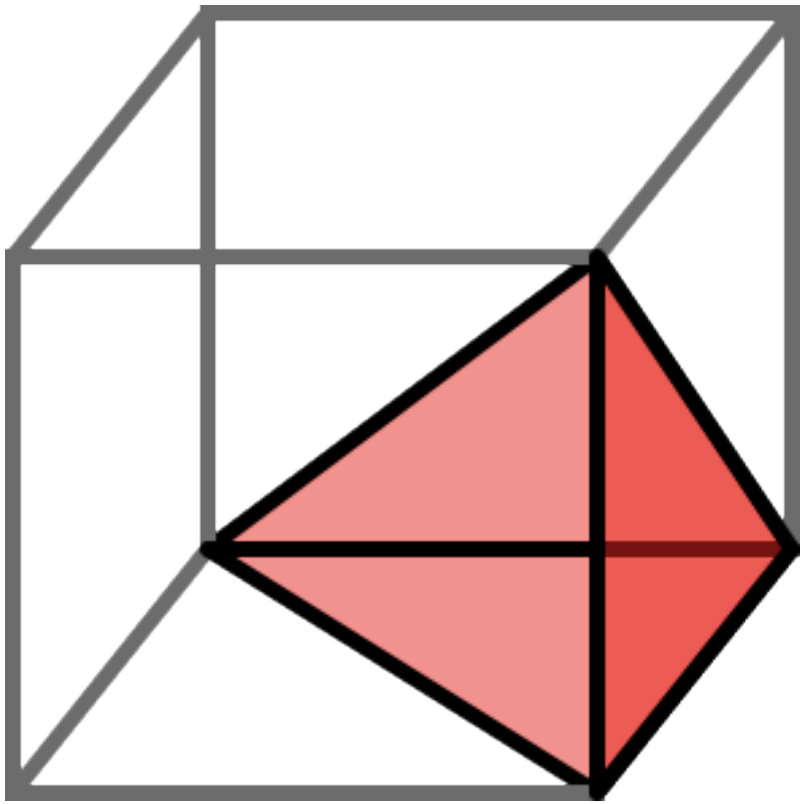
Three Dimensions



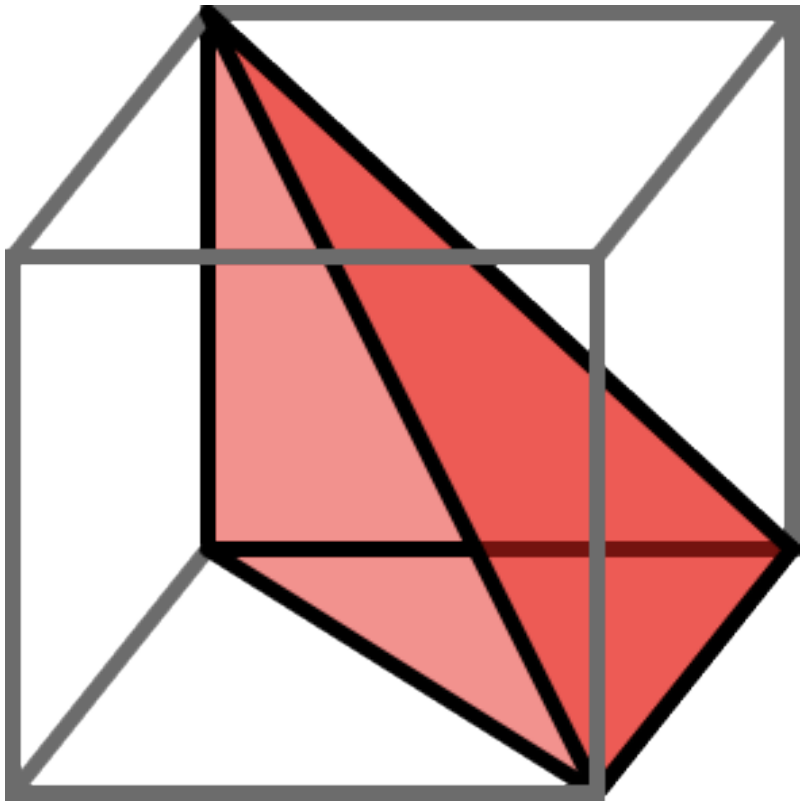
Three Dimensions



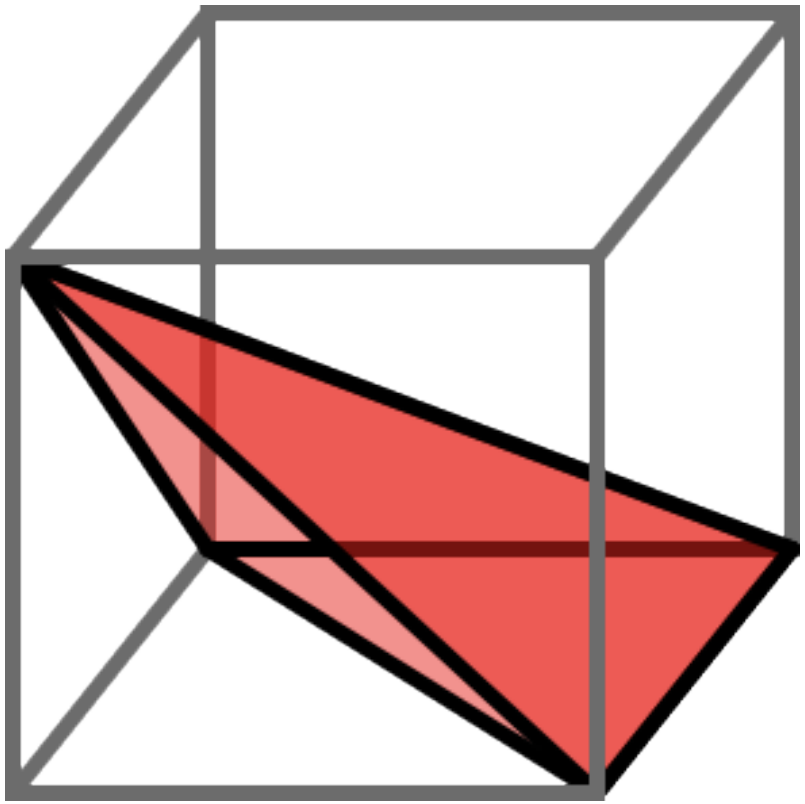
Three Dimensions



Three Dimensions



Three Dimensions



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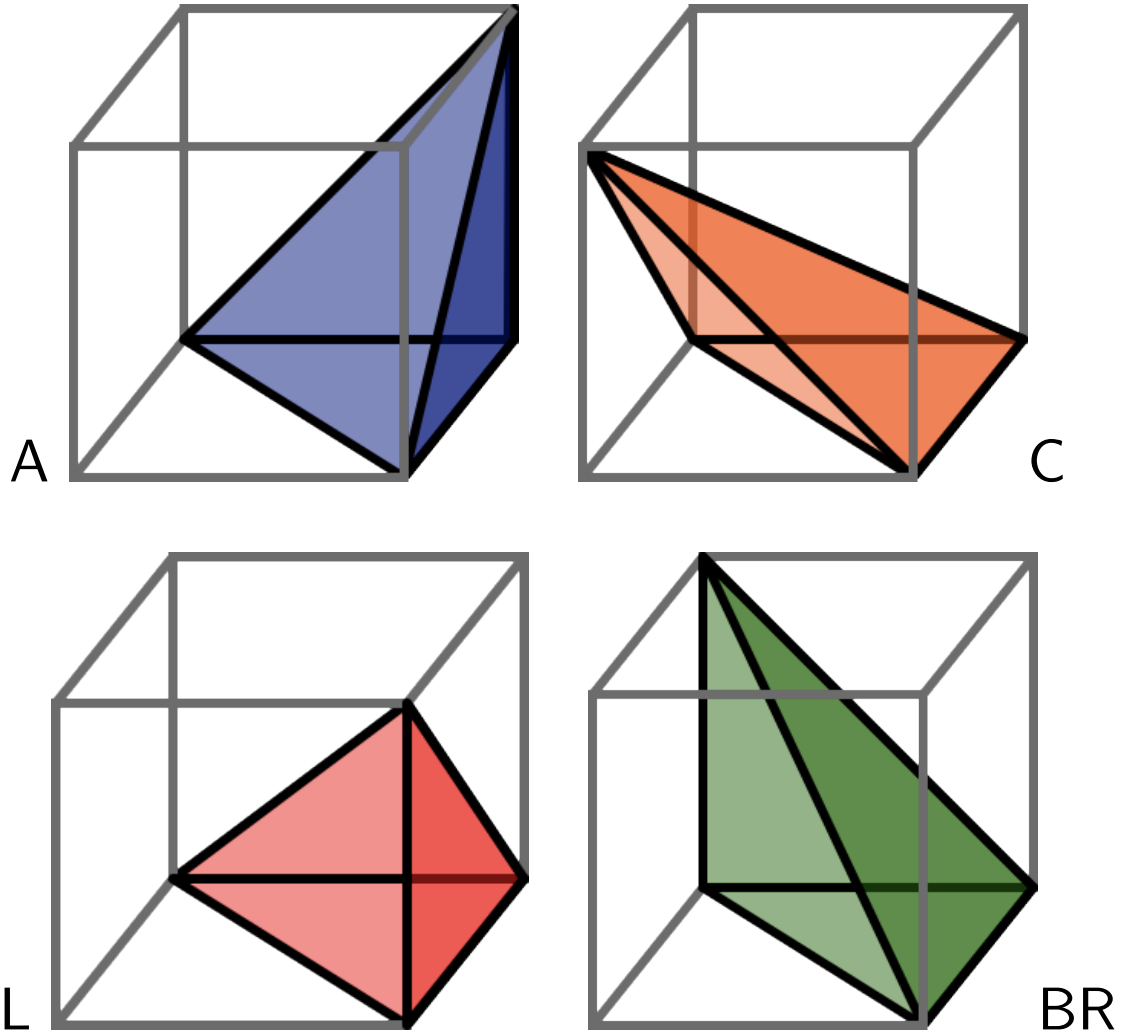

Pyramids